



Third Semester B.E./B.Tech. Degree Examination, June/July 2026 Material Science and Manufacturing Technology

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks, L: Bloom's level, C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	Differentiate Crystalline and Amorphous solids.	4	L1	CO1
	b.	Define APF. Find the APF of body centered cubic structure.	10	L2	CO1
	c.	Describe different factors affecting diffusion.	6	L2	CO1
OR					
Q.2	a.	Define Engineering stress and True stress. Derive relation between two.	8	L2	CO1
	b.	Explain Plastic deformation of single crystal by slip and twinning.	12	L2	CO1
Module – 2					
Q.3	a.	What are Composite materials? Discuss the functions of matrix and reinforcement in composite materials.	10	L2	CO2
	b.	Briefly explain advantages, limitations and applications of composite materials.	10	L2	CO2
OR					
Q.4	a.	Briefly explain piezoelectric materials and explain their engineering applications.	8	L2	CO2
	b.	Write short notes on Shape memory alloys and Fibre optic sensors.	12	L2	CO2
Module – 3					
Q.5	a.	Write a short note on Manufacturing process. Explain the classification of manufacturing.	10	L2	CO3
	b.	Explain different steps involved in casting.	10	L2	CO3
1 of 2					

OR

Q.6	a.	With a neat diagram, explain constructional features and working principle of cupola furnace.	10	L2	CO4
	b.	Explain the Centrifugal Casting process.	10	L2	CO4

Module – 4

Q.7	a.	With a neat diagram, explain Submerged Arc Welding (SAW).	8	L2	CO4
	b.	Explain Atomic Hydrogen Welding (AHW) and Metal Arc Welding (MAW).	12	L2	CO4

OR

Q.8		With neat sketch explain working principle of : i) Seam welding ii) Spot welding iii) Explosive welding iv) Thermit welding.	20	L2	CO4
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Module – 5

Q.9	a.	With a neat sketch, explain the specification of lathe.	10	L2	CO5
	b.	Write a short note on Cutting tool materials.	10	L2	CO5

OR

Q.10	a.	Define Milling. Briefly explain the classification of milting machines.	8	L2	CO5
	b.	Differentiate drilling boring and reaming.	6	L2	CO5
	c.	With neat diagram, explain different lathe operations.	6	L2	CO5
